

AMENDMENTS TO THE CLAIMS

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

1. (Currently amended): An optical fiber coupler comprising:

a plurality of optical fibers including a  $\lambda_1$ -band optical fiber and a  $\lambda_2$ -band optical fiber, fused together at a fusion-elongated portion,

wherein the  $\lambda_1$ -band and  $\lambda_2$ -band optical fibers in the plurality of optical fibers have a propagation constant difference between the  $\lambda_1$ -band and  $\lambda_2$ -band optical fibers in the fusion elongation portion of  $1 \times 10^{-4}$  rad/ $\mu\text{m}$  or smaller at a fusion elongating ratio in a range of 50% or less, and

wherein the  $\lambda_1$ -band is different from the  $\lambda_2$ -band.

2. (Withdrawn): An optical fiber coupler comprising:

a plurality of optical fibers including a  $\lambda_1$ -band optical fiber and a  $\lambda_2$ -band optical fiber, fused together at a fusion-elongated portion, wherein, in the fusion-elongated portion, each of the plurality of optical fibers tapers to a respective narrower outer diameter, relative to an outer diameter of the optical fibers outside the fusion-elongated portion,

wherein the  $\lambda_1$ -band is different from the  $\lambda_2$ -band, and

wherein at least outside the fusion-elongated portion, the  $\lambda_1$ -band optical fiber is a single mode optical fiber at a wavelength in the vicinity of 0.98  $\mu\text{m}$ ,

wherein at least outside the fusion-elongated portion, the  $\lambda_1$ -band optical fiber comprises a first core, a second core surrounding the first core and having a radius within the range of 10  $\mu\text{m}$  or greater, and a cladding surrounding the second core, and

wherein a relative refractive-index difference of the second core and the cladding is 0.1% or smaller.

3. (Withdrawn): An optical fiber coupler according to claim 2, wherein a relative refractive-index difference of the first core and the cladding is within a range from 0.7% to 0.9%.

4. (Withdrawn): An optical fiber coupler according to claim 3, wherein the  $\lambda_2$ -band optical fiber is a single mode optical fiber at a wavelength in the vicinity of 1.55  $\mu\text{m}$ .

5. (Withdrawn): An optical fiber coupler according to claim 2, wherein a relative refractive-index difference of the first core and the cladding is within a range from 0.6% to 0.8%.

6. (Withdrawn): An optical fiber coupler according to claim 5, wherein the  $\lambda_2$ -band optical fiber is a single mode optical fiber at a wavelength in the vicinity of 1.55  $\mu\text{m}$ .

7. (Withdrawn): An optical fiber for an optical fiber coupler comprising:  
a first core;  
a second core surrounding the first core and having a radius within the range of 10  $\mu\text{m}$  or greater; and  
a cladding surrounding the second core,

wherein a relative refractive-index difference of the second core and the cladding is 0.1% or smaller, and

wherein the optical fiber for the optical fiber coupler is a single mode optical fiber at a wavelength in the vicinity of 0.98  $\mu\text{m}$ .

8. (Withdrawn): An optical fiber for an optical fiber coupler according to claim 7, wherein a relative refractive-index difference of the first core and the cladding is within a range from 0.7% to 0.9%.

9. (Withdrawn): An optical fiber for an optical fiber coupler according to claim 7, wherein the refractive-index difference of the first core and the cladding is within a range from 0.6% to 0.8%.

10. (Withdrawn): An optical fiber coupler comprising:  
a  $\lambda_1$ -band optical fiber having a first core with a radius of  $r_1$ , a second core with a radius of  $r_2$  surrounding the first core, and a cladding surrounding the second core;  
a  $\lambda_2$ -band optical fiber including a core with a radius of  $r_3$ , and a cladding surrounding the core; and  
a fusion-elongated portion where the  $\lambda_1$ -band optical fiber and the  $\lambda_2$ -band optical fiber are fused together, each of the optical fibers in the fusion-elongated portion tapering to a respective narrower outer diameter, relative to an outer diameter of the optical fibers outside the fusion-elongated portion,

wherein the  $\lambda_1$ -band is lower in wavelength than the  $\lambda_2$ -band, and

wherein  $r_1 < r_3 \leq r_2$ .

11. (Withdrawn): An optical fiber coupler according to claim 10, wherein a propagation constant difference between the  $\lambda_1$ -band optical fiber and the  $\lambda_2$ -band optical fiber is  $10^{-4}$  rad/ $\mu\text{m}$  or smaller.

12. (Withdrawn): An optical fiber coupler according to claim 10, wherein a relative refractive-index difference of the second core and the cladding of the  $\lambda_1$ -band optical fiber is 0.1% or smaller.

13. (Withdrawn): An optical fiber coupler according to claim 10, wherein a relative refractive-index difference of the first core and the cladding of the  $\lambda_1$ -band optical fiber is within a range from 0.7% to 0.9%.

14. (Withdrawn): An optical fiber coupler according to claim 10, wherein said  $\lambda_1$ -band optical fiber is a single mode optical fiber at a wavelength in the vicinity of 0.98  $\mu\text{m}$ , and said  $\lambda_2$ -band optical fiber is a single mode optical fiber at a wavelength in the vicinity of 1.55  $\mu\text{m}$ .

15. (Previously presented): An optical fiber coupler as recited in claim 1, wherein at least outside the fusion-elongated portion, is a single mode optical fiber at a wavelength of about 0.98  $\mu\text{m}$ ,

wherein at least outside the fusion-elongated portion, the  $\lambda_1$ -band optical fiber comprises a first core, a second core surrounding the first core and having a radius of 10  $\mu\text{m}$  or greater, and a cladding surrounding the second core, and

wherein a relative refractive-index difference of the second core and the cladding is 0.1% or smaller.

16. (Previously presented): An optical fiber coupler according to claim 15, wherein a relative refractive-index difference of the first core and the cladding is within a range from 0.6% to 0.9%.

17. (Previously presented): An optical fiber coupler according to claim 16, wherein the  $\lambda_2$ -band optical fiber is a single mode optical fiber at a wavelength of about 1.55  $\mu\text{m}$ .

18. (Previously presented): An optical fiber coupler as recited in claim 1,  
wherein the  $\lambda_1$ -band optical fiber has a first core with a radius of  $r_1$ , a second core with a radius of  $r_2$  surrounding the first core, and a cladding surrounding the second core;

wherein the  $\lambda_2$ -band optical fiber includes a core with a radius of  $r_3$ , and a cladding surrounding the core;

wherein the  $\lambda_1$ -band is lower in wavelength than the  $\lambda_2$ -band, and  
wherein  $r_1 < r_3 \leq r_2$ .

19. (Canceled).

20. (Previously presented): An optical fiber coupler according to claim 18, wherein a relative refractive-index difference of the second core and the cladding of the  $\lambda_2$ -band optical fiber is 0.1% or smaller.

21. (Previously presented): An optical fiber coupler according to claim 18, wherein a relative refractive-index difference of the first core and the cladding of the  $\lambda_1$ -band optical fiber is within a range from 0.7% to 0.9%.

22. (Previously presented): An optical fiber coupler according to claim 18, wherein said  $\lambda_2$ -band optical fiber is a single mode optical fiber at a wavelength in the vicinity of 0.98  $\mu\text{m}$ , and said  $\lambda_2$ -band optical fiber is a single mode optical fiber at a wavelength in the vicinity of 1.55  $\mu\text{m}$ .